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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/788,727      | 02/27/2004  | Ciaran Avram Fox     | (0107-0039)         | 7762             |

7590 08/24/2006

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EXAMINER

WATKO, JULIE ANNE

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/788,727

Applicant(s)

FOX ET AL.

Examiner

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 14-20 and 24-37 is/are rejected.
- 7) ☒ Claim(s) 7, 11-13 and 21-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/27/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 02/27/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not state that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

The specification to which the oath or declaration is directed has not been adequately identified. See MPEP § 602.

It does not state that the person making the oath or declaration has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

The clause regarding "willful false statements ..." required by 37 CFR 1.68 has been omitted.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless – (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 8-10, 14-20 and 24-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Freitag et al (US PAP No. 20050180057 A1)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As recited in independent claims 1 and 14, Freitag et al show a spin valve sensor for a magnetic head, comprising: a free layer 214; an antiparallel (AP) self-pinned layer structure 212; the AP self-pinned layer structure including: a first AP pinned layer 220; a second AP pinned layer 222; an antiparallel coupling (APC) layer 218 formed between the first and the second AP pinned layers, a non-magnetic electrically conductive spacer layer 216 in between the free layer and the AP self-pinned layer structure; and a compressive stress modification layer 240 (see ¶ 0030, "capping layer structure 240 will shunt less sense current while providing increased compressive stress, which advantageously increases the pinning field") formed adjacent the AP self-pinned layer structure (see ¶ 0031, "capping layer structure may be used with a top spin valve sensor, i.e., a sensor with the pinned layer structure disposed between the free layer structure and the capping layer structure").

As recited in independent claims 24 and 31, Freitag et al show a spin valve sensor 200 for a magnetic head, comprising: a spin valve structure 210 which includes: a free layer 214, an antiparallel (AP) self-pinned layer structure 212; a non-magnetic electrically conductive spacer layer 216 in between the free layer and the AP self-pinned layer structure; the AP self-pinned layer structure including: a first AP pinned layer 222; a second AP pinned layer 220; an

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antiparallel coupling (APC) layer 218 formed between the first and the second AP pinned layers; a capping layer 246 formed over the spin valve structure; and a compressive stress modification layer (242 or 244, for example) formed over the capping layer.

As recited in independent claims 14 and 31, in addition to the above teachings, Freitag et al show a disk drive (see Fig. 1), comprising: a housing (see rectangular outline in Fig. 1); a magnetic disk 104 rotatably supported in the housing; a magnetic head 108; a support 110 mounted in the housing for supporting the magnetic head so as to be in a transducing relationship with the magnetic disk; a spindle motor 102 for rotating the magnetic disk; an actuator positioning means 112 connected to the support 110 for moving the magnetic head to multiple positions with respect to said magnetic disk; a processor (inherently) connected to the magnetic head assembly, to the spindle motor, and to the actuator for exchanging signals with the magnetic head for controlling movement of the magnetic disk and for controlling the position of the magnetic head; the magnetic head assembly including a read head (200, see Fig. 3); the read head including a spin valve sensor 210.

As recited in claims 2 and 15, Freitag et al show that the compressive stress modification layer increases a magnetostriction (see ¶ 0006, “positive magnetostriction of the pinned layers together with a compressive film stress aligns the magnetization of the pinned layers”) in the AP self-pinned layer structure to increase self-pinning (see ¶ 0031, “providing increased compressive stress, which advantageously increases the pinning field”).

As recited in claims 3, 16, 25 and 32, Freitag et al show that the compressive stress modification layer 240 reduces the likelihood of amplitude flip (see ¶ 0031, “advantageously increases the pinning field”) in the spin valve sensor.

As recited in claims 4, 18, 26 and 33, Freitag et al show that the compressive stress modification layer comprises ruthenium (see 242).

As recited in claim 5, Freitag et al show that the AP self-pinned structure is pinned by magnetostriction and compressive stress (see ¶ 0006, “positive magnetostriction of the pinned layers together with a compressive film stress aligns the magnetization of the pinned layers”).

As recited in claim 6, Freitag et al show that an antiferromagnetic pinning layer is not necessary for pinning the AP self-pinned layer structure (see ¶ 0004, “some spin valve sensors use self-pinned ferromagnetic structures, which do not use an antiferromagnetic pinning layer”).

As recited in claim 8, Freitag et al show that the compressive stress modification layer comprises a first compressive stress modification layer 244 and the spin valve sensor further comprises: a capping layer 246, and a second compressive stress modification layer 242 formed over the capping layer.

As recited in claims 9, 19 and 28, Freitag et al show that the compressive stress modification layer comprises a first compressive stress modification layer 244 and the spin valve sensor further comprises: a capping layer 246; a second compressive stress modification layer 242 formed over the capping layer, and the second compressive stress modification layer 242 comprising ruthenium (see ¶ 0025).

As recited in claims 10, 20 and 29-30, Freitag et al show that the compressive stress modification layer comprises a first compressive stress modification layer 244 and the spin valve sensor further comprises: a capping layer 246, a second compressive stress modification layer 242 formed over the capping layer, wherein the second compressive stress modification layer reduces the likelihood of amplitude flip in the spin valve sensor (see ¶ 0028).

As recited in claim 27 and 34, Freitag et al show that the compressive stress modification layer comprises a first compressive stress modification layer 244 and the spin valve sensor further comprises: a second compressive stress modification layer 242 formed adjacent the AP self- pinned layer structure (see ¶ 0031, "top spin valve sensor").

As recited in claim 37, Freitag et al show that the compressive stress modification layer comprises a first compressive stress modification layer 244 and the spin valve sensor further comprises: a second compressive stress modification layer 242 formed adjacent the AP self- pinned layer structure; and wherein the second compressive stress modification layer reduces the likelihood of amplitude flip in the spin valve sensor (see ¶ 0031, "advantageously increases the pinning field").

### ***Double Patenting***

4. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

5. Applicant is advised that should claim 29 be found allowable, claim 30 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

*Allowable Subject Matter*

6. Claims 7, 11-13 and 21-23 are allowed.

*Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pinarbasi (US Pat. No. 6295187 B1) shows a spin valve sensor (see especially Fig. 12) wherein positive magnetostriction fin film 220 creates a stress induced uniaxial anisotropy which supports the pinning of AP pinned structure 204 by AFM layer 222.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on Monday through Thursday, noon to 10PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko, J.D.  
Primary Examiner  
Art Unit 2627

August 21, 2006  
JAW

A handwritten signature in black ink, appearing to read 'JAW', with a large, stylized initial 'J' and a horizontal line extending to the right.